REMARKS

I. STATUS OF THE APPLICATION

Claims 13-25 are pending in the application.

Claims were 1-12 rejected under 35 U.S.C. §102(a).

Claim 13 is the only independent claim.

II. AMENDMENTS

The specification has been amended to place the application in correct idiomatic English.

Claims 1-12 have been cancelled without prejudice.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current Amendment. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

No new matter has been added.

III. CLAIMS 13-25 ARE NOVEL WITHIN THE MEANING OF 35 U.S.C. § 102(a) OVER HALVORSON BECAUSE THE APPLIED PRIOR ART FAILS TO TEACH AN INPUT DEVICE THAT IS OPERABLE TO ENABLE THE USER TO MODIFY ANY ONE OF A FIRST SET OF DATA AND A THIRD SET OF DATA BY WAY OF MODIFYING ANY ONE OF A SECOND SET OF DATA AND A FOURTH SET OF DATA

Claims 1-12 were rejected under 35 U.S.C. § 102(a) as being anticipated by Halvorson, as described in paragraph 3 of the Office Action.

Applicants respectfully submit that the rejection of claims 1-12 is moot, as these claims have been cancelled.

Applicants respectfully submit that claims 13-25 are novel within the meaning of 35 U.S.C. § 102(a) for the following reasons.

As described in the specification, for example on pages 1-4, prior art drug preparation instruction systems have many shortcomings. For example, among the printers of a prior art system, the printer for printing instructions for a "heat-sealed tablet" is placed on a table at the heat-sealed tablet preparation station, and is directly connected to a control circuit. The printer is programed such that it only prints instructions about these types of drugs. Specifically, the printer placed at the heat-sealed powder drug preparation station can only print instructions concerning heat-sealed

powder drugs. Thus, a problem will arise if, due to relocation of drug preparation stations, it becomes necessary to use the printer at the powder drug preparation station as a printer for printing instructions for "heat-sealed tablets." In such a case, it is necessary to reprogram the control circuit altogether. Such reprogramming is extremely time consuming and troublesome. The same problem arises if it is necessary to add a new drug preparation station and thus a new printer for printing instructions concerning drugs prepared in this station. In such a case, the control circuit has to be re-programed altogether.

The present invention provides a solution to the problems of the prior art drug preparation systems. Specifically the drug preparation order system of the present invention permits a user to easily modify a control unit, thereby modifying printing instructions corresponding to the various printer stations.

Specifically, newly added independent claim 13 recites:

a control unit operable to carry out logic operations and to output control signals based on drug preparation data, said control unit comprising

a data storage portion operable to store a first set of data, the first set of data corresponding to the drug preparation data, and

a printer setting portion;

a monitor operable to display a second set of data, the second set of data corresponding to the drug preparation data;

an input device operable to enable a user to enter the first set of data into said control unit; and

a plurality of printers connected to said control unit, said plurality of printers operable to print on drug preparation order sheets in response to the control signals;

wherein said printer setting portion is operable to store a third set of data, the third set of data corresponding to a correlation between the drug preparation data and said plurality of printers;

wherein said monitor is operable to display a fourth set of data, said fourth set of data corresponding to a correlation between the drug preparation data and the third set of data; and

wherein said input device is operable to enable the user to modify any one of the first set of data and the third set of data by way of modifying any one of the second set of data and the fourth set of data.

Halvorson fails to teach at least the above-identified limitations. The system as described in Halvorson is similar to the prior art system described by the Applicants in the background of the invention. In particular, Halvorson uses data relating to drug preparation and data relating to a correspondence between the drug preparation data and respective printers. However, in the system of Halvorson, similar to the system of the admitted prior art, the above-described data is not displayed on a monitor. The system of Halvorson does not display data relating to drug preparation and data relating to a correspondence between the drug preparation data and respective printers on a monitor. Thus, the system of Halvorson is not operable to enable a user to modify data in the control unit by modifying data displayed on the monitor. Therefore, in order to change the relationship between the drug types and the printer numbers in the system of Halvoson, the computer must be re-programed, which is not easy, even for an experienced programmer.

As anticipation under 35 U.S.C. § 102 requires that each and every element of the claim be disclosed in a prior art reference, *Akzo N.V. v. U.S. Int'l Trade Commission*, 808 F.2d 1471 (Fed. Cir. 1986), based on the foregoing, it is clear that Halvorson does not anticipate claim 13.

Since claims 14-25 are dependent upon claim 13, and therefore include all of the limitations thereof, Applicants submit that claims 14-25 additionally are not anticipated by Halvorson.

In view of the above remarks, Applicants respectfully submit that claim 13 is not anticipated by Halvorson, and urge that claim 13, and its dependent claims 14-25 are patentable.

IV. CONCLUSION

Having fully and completely responded to the Office Action, Applicants submit that all of the claims are now in condition for allowance, an indication of which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

Respectfully submitted,

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ug Preparation Instruction System

BACKGROUND OF THE INVENTION

This invention relates to a drug preparation instruction system having printers for printing prescription-based drug preparation instructions.

A typical such system uses a small computer such as a personal computer. ~~into which~~ necessary data is entered into the small computer such as patient names or numbers, drug types such as powders and tablets, drug names, dosage, and taking directions are entered from a host computer or through input means such as a keyboard, and such data are stored in the small computer.

Such a system also includes a plurality of printers each capable of printing drug preparation instructions for only one or one group of many different drug types.

The "drug types" include "tablets to be packaged", "heat-sealed tablets", "powder drugs to be packaged", "heat-sealed powder drugs", "liquid drugs" and "externally applied drugs". The term "to be packaged" means that the tablets or powder drugs are to be packaged by a packaging machine. The term "heat-sealed" means that tablets or powder drugs that have already been packaged and sealed are to be simply counted and

delivered to patients as they are. But drugs may be categorized in different ways.

The reason why each printer is adapted to print drug print instructions for only one drug type or only one group of drug types is because different types of drugs are usually prepared at different drug preparation stations spaced from one another. Thus, by arranging a plurality of printers at each drug preparation station, pharmacists do not have to leave their position to check the printers. Printers are placed e.g. on drug preparation tables having drug storage shelves at the respective drug preparation stations.

Drugs prepared at the respective drug preparation stations are either put in trays corresponding to respective patients. Trays have display means that display patient ID numbers and drug types such as tablets and powder drugs, as disclosed in unexamined Japanese patent publication 8-131519, and the trays may then be delivered to a drug delivery counter on a conveyor, as disclosed in unexamined Japanese patent publication 9-51922, or simply hand-carried to the counter.

Among the printers of this system, the printer for printing instructions for "heat-sealed tablets" is placed on a table at the heat-sealed tablet preparation station, and directly connected to the control circuit, which is programmed such that the printer prints only instructions

about ~~this type~~ three types of drugs.

For example, the printer placed at the heat-sealed powder drug preparation station can print only instructions concerning heat-sealed powder drugs. Thus, a problem will arise if, due to relocations of drug preparation stations, it becomes necessary to use the printer at the powder drug preparation station as a printer for printing instructions for e.g. "heat-sealed tablets". In such a case, it is necessary to reprogram the control circuit altogether. Such reprogramming is extremely time-consuming and troublesome.

The same problem arises if it is necessary to add a new drug preparation station and thus a new printer for printing instructions concerning drugs prepared in this station. In such a case, too, the control circuit has to be reprogrammed altogether.

Another problem with this system is that information provided by each printer is far from enough. For example, information on whether ~~or not taking guidance should be given to~~ should be given warnings for taking the drugs patients is not provided. ~~Also not displayed is~~ Information on whether ~~or not~~ drugs for a certain patient should be divided into a plurality of batches and put in ~~not one but~~ a plurality of trays additionally is not displayed. Information on whether ~~or not~~ drug taking guidance should be given to patients, that is, whether ~~or not~~ information on it is necessary to explain how to take drugs to patients ~~to patients~~ which is written in

doctor's order sheets, ~~which are~~ prepared besides prescriptions and put in trays. Thus, a pharmacist at the drug delivery counter has to pick up and read the order sheet in every tray to determine whether or not he or she has to explain how to take drugs ~~to patients.~~

Trays are usually stacked one on another for transportation. Thus, in order to pick up and read an order sheet in one tray, it is necessary to remove all the above trays. Order sheets in some or most trays may be indicating that drug taking guidance is unnecessary. ~~But~~ the pharmacist has to read all the order sheets ~~anyhow~~ in order to confirm that such guidance is not necessary. Delivering drugs to patients is thus time-consuming and tends to hinder smooth flow of the entire drug preparation line.

Conventional drug preparation instruction sheets contain no information on dividing drugs for one patient into a plurality of batches to put each batch in a separate tray, because no one has ever thought of such a thing. Thus, if a large amount of drugs are prescribed for one patient, the drugs tend to partially fall off while being transported on a single tray. Thus, it is often necessary to send drug preparation instruction sheets in a tray separately from prescribed drugs.

An object of this invention is to provide a drug preparation instruction system which is free of these

problems.

SUMMARY OF THE INVENTION

According to this invention, there is provided a drug preparation order system comprising a control unit for carrying out logic operations and outputting control signals based on externally inputted drug preparation data including a patient name or a patient code, drug codes, taking directions and dosage, and a plurality of printers connected to the control unit for printing on drug preparation order sheets in response to the control signals, the control unit having a data storage portion for storing basic data about drug codes including drug type codes, patient name and taking directions, and a printer setting portion for setting the correlation between the drug type codes and the printer, whereby reading drug type codes of drugs necessary for a patient from among the drug preparation data inputted in the data storage portion, setting data of the printer corresponding to the drug type codes by the printer setting portion, and printing on a drug preparation order sheet data including the patient name and the prescribed drug names by the printer in the set data.

In the ~~above~~ above system, when drug preparation data is inputted into the control unit, by reading drug

type codes from the data storage portion and by reading printer numbers corresponding to the respective drug type codes from the printer setting portion, drug data for respective patients ~~are~~ is printed individually on drug preparation instruction paper by a plurality of printers.

On the printer setting portion, data showing the correlation between the drug type codes and the printer numbers are recorded. By reading the printer number from the printer setting portion, it is automatically set by which printer the drug preparation instruction should be printed. If the layout of a pharmacy is changed, setting can be easily changed by re-setting the correlation.

Other features and objects of the present invention will become apparent from the following description made with reference to the accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic view of a drug preparation instruction system embodying the invention;

Fig. 2 is a control block diagram of the system;

Fig. 3 is a list showing relation between drug codes and drug type codes registered in the data storage portion;

Fig. 4 is a chart showing data set in the printer

unit 3 is a small personal computer (PC for short) including a CPU (central processing unit) 3a and an external memory 3b, called a file device. The CPU 3a has a memory for storing input data. The external memory 3b comprises a printer setting memory 3b1 and a data memory 3b2, which will be described later.

As input means, a keyboard 7 and a mouse 8 are connected to the CPU 3a. A host computer 9 is also connected to the CPU to enter prescription data through communication lines. But the host computer 9 is not an essential element. Numeral 10 indicates an infrared transmission unit through which necessary ~~part~~ parts of the prescription data are radio-transmitted to the trays 6. Instead of infrared transmission, a contact transmission or any other wireless transmission may be used. One or a plurality of (e.g. two or three) trays 6a, 6b are used to transport drugs for one patient. The CPU transmits necessary ~~part~~ parts of the prescription data to each tray for the one patient.

Each tray 6 has its own microcomputer including a CPU (central processing unit) 12 which receives prescription data through an infrared transmission unit 11, and displays the data on a liquid crystal display 13. When the CPU 12 receives a switch signal from a button switch 14, it returns necessary signals to the CPU 3a of the control unit 3 through the infrared transmission unit

11. Fig. 10A shows the appearance of the tray 6. Its use and operation will be described later.

In the above arrangement, the CPU with a memory, CRT display, keyboard, mouse and file device are all dedicated to a personal computer. ~~But instead~~ Alternatively, the file device may be arranged as an independent server connected to the CPU through a network in a server-client (CPU) relation.

In the printer setting portion 3b1, setting data are stored which specify which printers (indicated in numbers) correspond to which drug types (indicated in codes) to set which printers are to be used to print data on the respective drug types. The data memory 3b2 stores basic data including all the drug codes for determining the drug name, unit and drug type code for each drug code in the form of a list.

The basic data stored in the data memory 3b2 are stored in files generally called master files. These files include a drug master file, patient master file, master file concerning how to take drugs, and other auxiliary files including department master files and doctor master files. A specific example of drug master file is shown in Fig. 3.

As shown, a drug master file lists drug codes, drug names, units and drug type codes in a list form. Drug codes are shown in the form of abbreviations of

received in a code form suitable for the present system in Step S1.

In S2, tray division is decided. The drug data for each patient includes drug types, dosage for each time, and the number of days for which the drugs have been prescribed. In S2, the number of trays used is ~~decided taking these data into consideration.~~ determined based on this data If the number of days is greater than a predetermined value, ~~not one but~~ a plurality ~~of~~, ~~i.e. two or more~~ trays are used for one patient.

But if too many trays are used for each patient, handling becomes difficult, the cost increases, and a larger space is needed. Thus, the number of trays used for each patient should be determined taking into consideration past experiences.

Generally speaking, if drugs are prescribed for a large number of days, the amount of the drugs is correspondingly large. Among the drug types, "heat-sealed tablets" (ten tablets are usually packaged in each bag) are liable to drop off trays. Thus, ~~this type~~ these types of drugs should be put in ~~an~~ extra ~~tray~~ trays that are ~~separately~~ separate from other types of drugs. It is to be understood that the term "tablets" herein used include capsules, and the term "heat-sealed" encompasses PTP (Press Through Package) packaging.

For how many days drugs should be given varies

from one pharmacy to another and should be adjusted within the range of from 30 to 90 days. In some pharmacies, "heat-sealed tablets" may be put in one tray, "externally applied drugs" and "liquid drugs" in another, and all the others in still another tray.

In Step S3, the drug prescription data are displayed on the CRT display 5 for confirmation. Since only drug code data are used for drugs, and only code data are used for patients, taking directions, departments and MD's, corresponding drug names, patient names, taking directions, departments and MD's names are read from the respective files and drug preparation data are displayed in such a format as shown in Fig. 7.

In Step S4, a pharmacist visually checks the drug preparation data thus displayed to see if there is anything wrong in the data. In this step, the pharmacist checks if the respective data are proper based on prescriptions prepared by doctors. If any flaw is found in the data, the displayed data portion is clicked for correction. When a "~~monitor~~ inspection OK" button provided at the bottom of the screen is clicked, ~~you will proceed~~ the process proceeds to the next step.

As shown in Fig. 7, when the drug preparation data are shown, the screen display includes division into trays and whether or not taking guidance is necessary. A, B in the tray division column indicate that drugs should